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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/760,505	01/21/2004	Jiro Hiraiwa	247935US2	1488
22850	7590	03/18/2009		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER ZHENG, LOIS L	
			ART UNIT 1793	PAPER NUMBER
			NOTIFICATION DATE 03/18/2009	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/760,505

**Applicant(s)**

HIRAIWA ET AL.

**Examiner**

LOIS ZHENG

**Art Unit**

1793

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2 and 4-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 19 February 2009 has been entered.

### ***Status of Claims***

2. Claims 1 and 9 are amended in view of applicant's amendment filed 21 January 2009. Therefore, claims 1-2 and 4-15 are currently under examination.

### ***Means-Plus-Function Language***

3. The claimed first and second heat exchanging means as recited in claims 1-2 and 5-6 do not invoke 35 U.S.C. § 112, 6th paragraph because they are not written in proper means-plus-function language.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites the limitation "the heat exchanging means" in line 2. However, it is unclear if "the heat exchanging means" is directed to the first heat exchanging means or the second heat exchanging means.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-2 and 4-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tharp US 6,210,549(Tharp), and further in view of TW 453,508 (TW'508) and further in view of Russell et al. US 4,026,775(Russell).

Tharp teaches an electrolytic fluorine gas generator comprising a jacket with a cooling medium surrounding the electrolytic cell (Fig.10 #38). In addition, Tharp teaches that the cooling jacket may comprise tubes carrying cooling medium (col. 2 lines 56-58). Tharp further teaches that heating temperature control means having heating elements can be applied to the bottom of the electrolytic cell(col. 2 lines 58-60).

Regarding claims 1-2, 5-6 and 9-10, even though Tharp teaches running cooling medium through the jacket, it is clear that the jacket as taught by Tharp is capable of carrying warm liquid as heat exchange medium as well. Therefore, the jacket as taught by Tharp reads on the claimed first heat exchange means and is provided around the electrolytic cell as claimed. The heating temperature control means having heating

elements applied to the bottom of the electrolytic cell of Tharp reads on the claimed second heat exchange means.

However, Tharp does not teach the claimed outer frame sealed and disposed further surrounding the outside of the first heat exchanging means with space and the claimed decompression or vacuum insulating zone which is formed in the outer frame. Tharp also does not teach the claimed thermometer measuring the temperature of the electrolytic bath, the claimed heating/cooling apparatus that heats and cools the heat exchange medium based on the temperature reading from the thermometer and the claimed insulating zone insulates the electrolytic cell and the pipe.

TW'508 teaches a protective sheath outside of a heated process chamber wherein the protective sheath comprising a sealed vacuum chamber in order to effectively provide thermal insulation and prevent heat loss(see translation, page 2, last two paragraphs; page 3, bottom paragraph).

Regarding claims 1-2, 5-6 and 9-10, it would have been obvious to one of ordinary skill in the art to have incorporated the thermal insulating sheath as taught by TW'508 separately around cooling jacket of Tharp in order to effectively provide thermal insulation and prevent undesirable heat loss or heat gain to the heat exchange means as taught by TW'508. Therefore, the thermal insulating sheath in the apparatus of Tharp in view of WO'508 comprises the claimed vacuum insulating zone capable of insulating the electrolytic cell and the cooling pipe as claimed.

Russell teaches controlling of an electrolytic coating bath by heating the electrolytic bath liquid by a heat exchange medium wherein the heat exchange medium

is heated based on the temperature reading of electrolytic bath liquid(col. 3 lines 1-14 and claim 1).

Regarding claims 1-2, 5-6 and 9-10, it would have been obvious to one of ordinary skill in the art to have incorporated the technique of heating and cooling heat exchange medium based on electrolyte temperature as taught by Russell into controlling the heat exchange medium of Tharp in view of TW'508 and incorporated the temperature sensor of Russell into the electrolytic bath of Tharp in view of TW'508 in order to better control the electrolytic bath temperature as taught by Russell.

Regarding claims 4 and 11, Tharp further teaches the claimed support member comprising a flange part(Fig. 10 #5B) and an upper lid(Fig. 10 #2), the claimed cover member(Fig. 1 #6), and the claimed electric insulating material(Fig. 9 #32) and a gas sealing material(col. 11 lines 32-37) disposed between the support member and the cover member.

Regarding claims 7 and 12, Tharp further teaches that its electrolytic cell can be a box with open top(Fig. 10 #5) as claimed.

Regarding claims 8 and 13, Tharp further teaches that the molten salt is hydrogen fluoride(col. 9 lines 17-19).

8. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tharp in view of TW'508 and Russell, and further in view of Johnson et al. US 3,607,685(Johnson).

The teachings of Tharp in view of TW'508 and Russell are discussed in paragraph 7 above. However, Tharp in view of TW'508 and Russell do not teach the

claimed electrically insulated tube connecting the heating/cooling apparatus and the pipe(i.e. to the heat exchange jacket).

Johnson teaches the need for electrical insulation/isolation of heat exchanging means from a molten salt cell by using refractory materials in between pipes to prevent "short circuit" hazards (col. 4 lines 21-26).

Regarding claims 14-15, it would have been obvious to one of ordinary skill in the art to have incorporated the refractory material in the piping between the heating/cooling apparatus of Tharp in view of TW'508 and Russell in order to prevent "short circuit" hazards as taught by Johnson.

#### ***Response to Arguments***

9. Applicant's arguments with respect to claims 1-2 and 4-15 filed 21 January 2009, but they are not persuasive.

In the remarks, applicant argues that none of the prior art references teaches the claimed "insulating zone insulates the electrolytic cell and the pipe".

The examiner does not find applicant's argument persuasive because the vacuum thermal insulating sheath surrounding the cooling jacket based on the combined teaching of Tharp and TW'508 comprises the claimed insulating zone capable of insulating the electrolytic cell and the pipe as claimed.

Applicant further argues that TW'508 does not teach the claimed outer frame and the claimed decompression or vacuum insulating zone".

The examiner does not find applicant's argument persuasive because TW'508 teaches that the thermal insulating sheath comprises a vacuum insulating zone (Fig.2, #

113) and is position outside of the heater(Fig. 2 #. 121) for thermal insulation and effective prevention of heat loss. When incorporated into the cooling jacket and the heating means of Tharp, the thermal insulation sheath is inherently capable simultaneously insulating the electrolytic cell and the cooling jacket while allowing cooling/heating of the electrolytic cell to occur.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LOIS ZHENG whose telephone number is (571)272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/



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Supervisory Patent Examiner, Art  
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